

IN THE CLAIM

1 1. (Currently Amended) A method for managing a memory system having a plurality of
2 subsystems, comprising the steps of:
3 upon accessing the subsystems for a piece of data used by a first process,
4 determining an access time to acquire the piece of data from a
5 subsystem in the memory system;
6 comparing the determined access time to a threshold; and
7 taking an action based on results of the comparing step;
8 wherein
9 a memory table includes entries pointing to data blocks storing data
10 for at least one subsystem;
11 the entries are used to locate the data stored in the data blocks; and
12 while the first process is being executed, the memory table working
13 with a memory manager ~~managing~~ manages the data blocks
14 in parallel with ~~independent of~~ an operating system working
15 with the memory system and in parallel with ~~independent of~~
16 a processor working with the memory system.

1 2. (Previously Presented) The method of claim 1 wherein a data block containing the
2 piece of data is placed in the memory system based on information selected in one
3 or a combination of:
4 a movement pattern of data in the data block,
5 a structure of the memory system, and
6 a cache-level architecture in the memory system.

1 3. (Canceled)

1 4. (Canceled)

1 5. (Previously Presented) The method of claim 1 further comprising the steps of:
2 the memory table using a physical address of a memory page
3 corresponding to the piece of data to convert to a location address
4 corresponding to an entry pointing to the location of the piece of
5 data.

1 6. (Currently Amended) A method for managing a memory system, comprising the steps
2 of:
3 upon accessing the memory system for a piece of data used by a first
4 process,
5 a processor working with the memory system continuing its
6 functions until it is stalled;
7 determining an access time to acquire the piece of data;
8 from the acquired access time, determining a time taken to
9 complete the memory access;
10 comparing [[a]] the time taken to complete the memory access to a
11 threshold; and
12 taking an action based on results of the comparing step.

1 7. (Original) The method of claim 6 wherein the action is selected in one or a combination
2 of
3 postponing executing the first process and allowing executing a second
4 process;
5 causing the first process to be switched to a second process; and
6 causing a performance monitor on the memory system or on a system
7 using the memory subsystem.

1 8. (Original) The method of claim 6 further comprising the step of polling a latency
2 manager for the time taken to complete the memory access; the latency manger
3 being part of managing the memory system.

1 9. (Previously Presented) The method of claim 6 further comprising the steps of:
2 using a memory table having entries pointing to data blocks storing data
3 for at least one subsystem; and
4 using the entries to locate the data stored in the data blocks.

1 10. (Currently Amended) The method of claim 9 wherein, while the first process is being
2 executed, the memory table working with a memory manager ~~managing~~ manages
3 the data blocks in parallel with ~~independent of~~ a processor working with the
4 memory system and in parallel with ~~independent of~~ an operating system working
5 with the memory system.

1 11. (Currently Amended) A method for managing a memory system having a plurality of
2 subsystems each corresponding to an access time, the method comprising the steps
3 of:

4 upon accessing the memory system for a piece of data used by a first
5 process
6 counting a time elapsed from the time the data access starts; the
7 counted time being increased as the data is being accessed;
8 comparing the counted time to a threshold being selected from an
9 access time of a subsystem; and
10 based on results of the comparing step, taking an action selected in
11 one or a combination of
12 postponing executing the first process and allowing
13 executing a second process;
14 causing the first process to be switched to a second process;
15 and
16 causing a performance monitor on the memory system or on
17 a system using the memory system.

1 12. (Previously Presented) The method of claim 11 further comprising the steps of:
2 using a memory table having entries pointing to data blocks storing data
3 for at least one memory subsystem; and
4 using the entries to locate the data stored in the data blocks.

1 13. (Currently Amended) A computer-readable medium embodying instructions for a
2 computer to perform a method for managing a memory system having a plurality
3 of subsystems, the method comprising the steps of:
4 upon accessing the subsystems for a piece of data used by a first process,
5 determining an access time to acquire the piece of data from a
6 subsystem in the memory system;

7 comparing the determined access time to a threshold; and
8 taking an action based on results of the comparing step;
9 wherein
10 a memory table includes entries pointing to data blocks storing data
11 for at least one subsystem;
12 the entries are used to locate the data stored in the data blocks; and
13 while the first process is being executed, the memory table working
14 with a memory manager ~~managing~~ manages the data blocks
15 in parallel with independent of an operating system working
16 with the memory system and in parallel with independent of
17 a processor working with the memory system.

1 14. (Previously Presented) The computer-readable medium of claim 13 wherein a data
2 block containing the piece of data is placed in the memory system based on
3 information selected in one or a combination of:
4 a movement pattern of data in the data block,
5 a structure of the memory system, and
6 a cache-level architecture in the memory system.

1 15. (Canceled)

1 16. (Canceled)

1 17. (Previously Presented) The computer-readable medium of claim 13 wherein the
2 method further comprises the steps of:

the memory table using a physical address of a memory page
corresponding to the piece of data to convert to a location address
corresponding to an entry pointing to the location of the piece of
data.

18. (Currently Amended) A computer-readable medium embodying instructions for a
computer to perform a method for managing a memory system, the method
comprising the steps of:

upon accessing the memory system for a piece of data used by a first
process,

a processor working with the memory system continuing its
functions until it is stalled;

determining an access time to acquire the piece of data;

from the acquired access time, determining a time taken to

complete the memory access;

comparing $[[a]]$ the time taken to complete the memory access to a
threshold; and

based on results of the comparing step, taking an action.

19. (Original) The computer-readable medium of claim 18 wherein the method further
comprises the step of polling a latency manager for the time taken to complete the
memory access; the latency manger being part of managing the memory system.

20. (Previously Presented) The computer-readable medium of claim 18 wherein the
method further comprises the steps of:

3 using a memory table having entries pointing to data blocks storing data
4 for at least one subsystem; and
5 using the entries to locate the data stored in the data blocks.

1 21. (Currently Amended) A computer-readable medium embodying instructions for a
2 computer to perform a method for managing a memory system having a plurality
3 of subsystems each corresponding to an access time, the method comprising the

4 steps of:

5 upon accessing the memory system for a piece of data used by a first

6 process,

7 counting a time elapsed from the time the data access starts; the

8 counted time being increased as the data is being accessed;

9 comparing the counted time to a threshold being selected from an

10 access time of a subsystem; and

11 based on results of the comparing step, taking an action selected in

12 one or a combination of

13 postponing executing the first process and allowing

14 executing a second process;

15 causing the first process to be switched to a second process;

16 and

17 causing a performance monitor on the memory system or on

18 a system using the memory subsystem.

1 22. (Currently Amended) The computer-readable medium of claim 21 wherein the method
2 further comprises the steps of:

3 using a memory table having entries pointing to data blocks storing data
4 for at least one memory subsystem; and
5 using the entries to locate the data stored in the data ~~blocks~~ blocks.

1 23. (Currently Amended) An apparatus for managing a memory system having a plurality
2 of subsystems, comprising:

3 means for, upon accessing the subsystems for a piece of data used by a first
4 process,
5 determining an access time to acquire the piece of data from a
6 subsystem in the memory system;
7 comparing the determined access time to a threshold; and
8 taking an action based on results of the comparing step;

9 wherein

10 a memory table includes entries pointing to data blocks storing data
11 for at least one subsystem;
12 the entries are used to locate the data stored in the data blocks; and
13 while the first process is being executed, the memory table working
14 with a memory manager ~~managing~~ manages the data blocks
15 in parallel with independent of an operating system working
16 with the memory system and in parallel with independent of
17 a processor working with the memory system.

1 24. (Previously Presented) The apparatus of claim 23 wherein a data block containing the
2 piece of data is placed in the memory system based on information selected in one
3 or a combination of:

4 a movement pattern of data in the data block,

5 a structure of the memory system, and
6 a cache-level architecture in the memory system.

1 25. (Canceled)

1 26. (Canceled)

1 27. (Previously Presented) The apparatus of claim 23 wherein the memory table using a
2 physical address of a memory page corresponding to the piece of data to convert to
3 a location address corresponding to an entry pointing to the location of the piece of
4 data.

1 28. (Currently Amended) An apparatus for managing a memory system, comprising:
2 upon accessing the memory system for a piece of data used by a first
3 process,
4 a processor for working with the memory system and for
5 continuing its functions until it is stalled;
6 determining an access time to acquire the piece of data;
7 from the acquired access time, determining a time taken to
8 complete the memory access;
9 means for comparing [[a]] the time taken to complete the memory
10 access to a threshold; and
11 means for taking an action based on results of comparing.

1 29. (Original) The apparatus of claim 28 further comprising means for polling a latency
2 manager for the time taken to complete the memory access; the latency manger
3 being part of managing the memory system.

1 30. (Previously Presented) The apparatus of claim 28 further comprising a memory table
2 having entries pointing to data blocks storing data for at least one subsystem; the
3 entries being used to locate the data stored in the data blocks.

1 31. (Currently Amended) An apparatus for managing a memory system having a plurality
2 of subsystems each corresponding to an access time, comprising:
3 upon accessing the memory system for a piece of data used by a first
4 process,
5 means for counting a time elapsed from the time the data access
6 starts; the counted time being increased as the data is being
7 accessed;
8 means for comparing the counted time to a threshold being selected
9 as from access time of a subsystem; and
10 means for taking an action selected in one or a combination of
11 postponing executing the first process and allowing
12 executing a second process;
13 causing the first process to be switched to a second process;
14 and
15 causing a performance monitor on the memory system or on
16 a system using the memory subsystem.

1 32. (Previously Presented) The apparatus of claim 31 further comprising a memory table
2 having entries pointing to data blocks storing data for at least one memory
3 subsystem; the entries being used to locate the data stored in the data blocks.

1 33. (Previously Presented) The method of claim 5 wherein the physical address of the
2 memory page is converted from a virtual address of the piece of data.

1 34. (Previously Presented) The computer-readable medium of claim 17 wherein the
2 physical address of the memory page is converted from a virtual address of the
3 piece of data.

1 35. (Previously Presented) The apparatus of claim 27 wherein the physical address of the
2 memory page is converted from a virtual address of the piece of data.